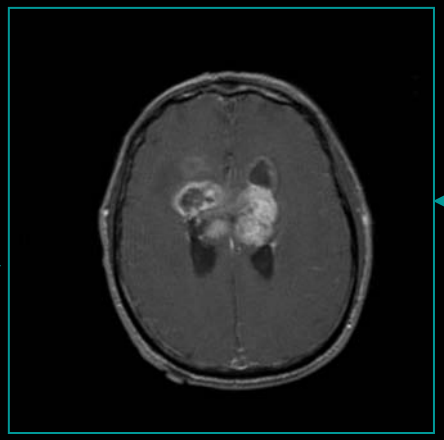
BRP: Interdisciplinary Modeling of tumor complexity

E.A Chiocca, MD PhD
Neurosurgery/Neuro-oncology
The Ohio State University

•Genetic modifications of glioma cells
•siRNA, gene transfer
•Measure changes in invasion/ proliferation variables after genetic modifications.

Michael Berens, PhD
TGEN
University of Arizona

•Global gene expression profile analyses of tumor cell proliferation/invasion



Leonard Sander, PhD
Theoretical Physics
University of Michigan

•Deriving equations predictive of glioma
•growth/invasion
•Computer modeling

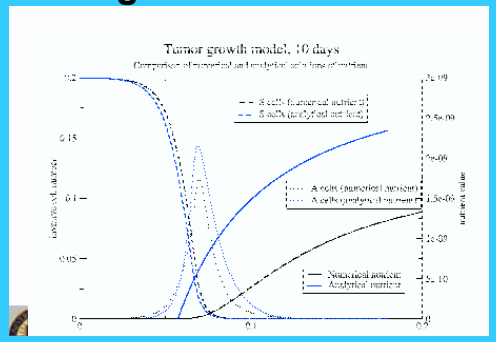
Thomas Deisboeck, MD
Radiology
Massachusetts General Hospital

•Models of tumor growth/invasion
•Computer models of gene/growth factor networks
•Patient-based radiologic validation

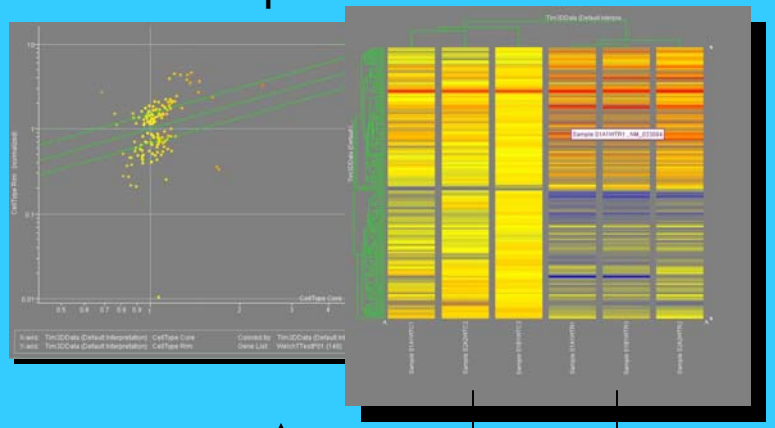
David Weitz, PhD
Applied Materials Engineering
Harvard University

•Effect of environment/matrix on tumor cell growth/invasion
•Measurement of environmental parameters on tumor growth/invasion

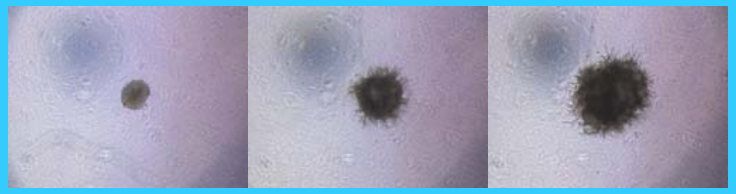
Mathematical modeling of growth/invasion



Gene Expression Profiles

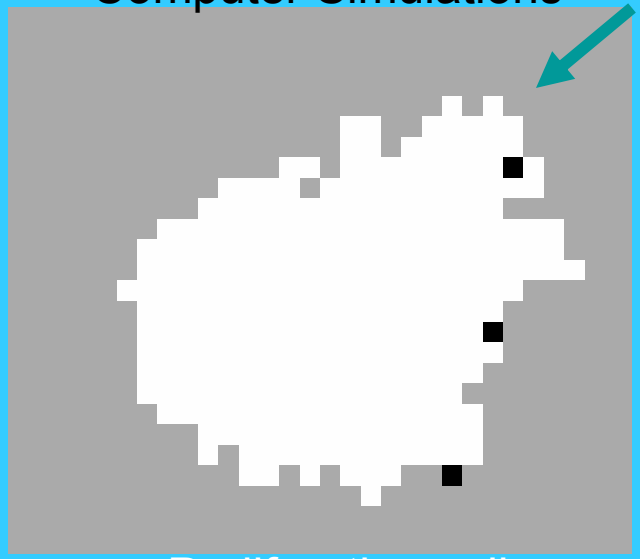


4D *in vitro* model of tumor invasion



Computer Simulations

Replenished Food Source



■ Proliferating cells

□ Migrating cells

Tumor cell motion through collagen matrix